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branches to erect themselves or in other cases to develop, though they have the same tendency to do so as he; their geotropism or their power of growth is held in check by his own. Suppress the apex, let it die or become enfeebled, and the subjugated branches lift their heads. Several could erect themselves and take the lead, and that is sometimes observed. But ordinarily a new conflict for precedence occurs among the branches; the one nearest the apex or the most vigorous near one early asserts its supremacy and in its turn keeps its rivals at its feet. *Cf.* the independent and almost simultaneous proposal of the like idea by McCALLUM, BOT. GAZETTE **40** : 262. Oct. 1905.—C. R. B.

Ecological survey.—PETHYBRIDGE and PRAEGER[20] have added another vegetation map and ecological description to the list of vegetation surveys of the British Isles. The area discussed lies south and west of Dublin. After a historical introduction the geology, physiography, floristics, and survey methods are briefly explained. The vegetation is divided primarily into littoral, agrarian, hill-pasture, and moorland zones, and the woodlands. The zones are further subdivided into associations. These are described in detail and as far as possible related to the factors determining their occurrence. The text is accompanied by a map and five excellent plates of vegetation types. The paper will prove of especial interest to those who have followed the work of R. SMITH, W. SMITH, and LEWIS in Scotland and England.—E. N. TRANSEAU.

Alternation of generations in animals.—In criticism of CHAMBERLAIN'S paper on this subject[21] LYON[22] holds that the phylogeny of animal gametes gives no evidence of their being reduced or vestigial generations, comparable with the gametophytic generation in plants; similarity of cytological processes does not prove identity of morphological value in the two cases. He refers to the alternation in Hydrozoa, and calls attention to the earlier proposal by BEARD and MURRAY of a theory similar to CHAMBERLAIN'S. In reply CHAMBERLAIN maintains[23] that his critic fails to distinguish between a gametophytic generation and a gametophytic plant. He holds that the generations in Hydrozoa do not alternate in the botanical sense, and points out that although reduction of the gamete-bearing generation has not been proved for animals, there is strong evidence for its having occurred in plants.—M. A. CHRYSLER.

Mechanics of secretion.—PANTANELLI[24] has attempted to ascertain whether or not true secretion of enzymes occurs. He defines secretion as "the emission of substances by living protoplasm, a thing possible through a self-regulated change in the condition of permeability of the plasmatic membranes such that the organism is able at pleasure to reverse it." He finds that the ferment of Roman bread and Chianti wine truly secretes invertase, by the augmentation of the permeability of the protoplasm during the period of fermentative activity. This increased permeability is general, various salts escaping more freely at the same time. In *Mucor stolonifer*, however, the emission of invertase seems to have the character of a free exit of materials from dying parts, coincident with spore formation. Whether it has a true but weak secreting power remains for further study.—C. R. B.

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[20] PETHYBRIDGE, G. H. and PRAEGER, R. L., The vegetation of the district lying south of Dublin. Proc. Roy. Irish Acad. B. **25**: 124–180. 1905.

[21] BOT. GAZETTE **39**: 137–144. 1905.

[22] LYON, H. L., Alternation of generations in animals. Science N. S. **21**: 666–667. 1905.

[23] CHAMBERLAIN, C. J. Alternation of generations in animals. Science N. S. **22**: 208–211. 1905.

[24] PANTANELLI, E., Meccanismo di secrezione degli enzimi. Annali di Bot. **3** : 113–142. 1905.

Respiration.— PALLADIN distinguishes[25] three sources of the respiratory CO_2 of plants: (1) nucleo-CO_2 produced by the action of enzymes, which, partly soluble, partly insoluble in expressed sap, are intimately bound up with the protoplasm; (2) stimulation-CO_2, formed by the protoplasm itself (apparently directly) under the action of stimuli; (3) oxydase-CO_2, produced by various oxidases. The process which characterizes animal and plant life consists in the excretion of nucleo-CO_2 which is formed by decomposition without the participation of atmospheric oxygen. Intramolecular respiration is a primary phenomenon, whose CO_2 is principally nucleo-CO_2 and in some cases also stimulation-CO_2. But alcoholic fermentation is no simple phenomenon, and, as KOSTYTSCHEW has shown, must be distinguished from intramolecular respiration.— C. R. B.

Apple and pear rot.— LONGYEAR[26] has published the results of his study of a rot of apples and pears due to an undescribed species of Alternaria. The same disease has so far been found in California, Colorado, and Michigan, and in Colorado is one of the most widely distributed and common diseases of apples. PADDOCK[27] was the first to call attention to it. In the case of the apple the disease attacks the fruit only, but it attacks the fruit, leaves, and young sprouts of the pear. In the apple it appears frequently first at the blossom end of the fruit and, in the case of sorts having a deep calyx-tube, a core-rot may occur. The disease may be controlled by spraying with Bordeaux mixture and plowing under or removing the diseased fruits in which the fungus is able to pass the winter.— E. MEAD WILCOX.

Reduction division.—The earliest organisms were doubtless non-sexual. In phylogeny, according to SCHAFFNER,[28] the conjugation of nucleated cells introduced

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[25] PALLADIN, W., Ueber den verschiedenen Ursprung der während der Atmung der Pflanzen ausgeschiedenen Kohlensäure. Vorlaufige Mitteilung. Ber. Deutsch. Bot. Gesells. **20**: 240–247. 1905.

[26] LONGYEAR, B. O., A new apple rot. Bull. Col. Agric. Exp. Stat. 105: 1–12. *pls. 1–4.* 1905.

[27] PADDOCK, W., A new apple disease. Rept. Col. Exp. Stat. **17**: 99. 1904.

[28] SCHAFFNER, JOHN H., The nature of the reduction division and related phenomena. Ohio Naturalist **5**:331–340. 1905.